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ORIGINAL ARTICLE

Quality of life and its correlates among heroin users in Taiwan

台灣海洛因使用者的生活品質和其相關因子

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Abstract The aims of this study were to compare the quality of life (QOL) between subjects with and without heroin use and to examine the association of QOL with sociodemographic characteristics, characteristics of heroin use, family support, and depression among heroin users at entry to a methadone maintenance treatment program. A group of 123 heroin users who visited an outpatient addiction treatment clinic in southern Taiwan for methadone maintenance treatment were recruited into this study. We also recruited 106 subjects who had never used heroin as the control group. Their QOL status was assessed by the short form of the Taiwan Version of the World Health Organization Questionnaire on Quality of Life (the WHOQOL-BREF Taiwan version). The level of QOL between subjects with and without heroin use was compared, and the correlates of QOL among heroin users were examined. Heroin users had poorer QOL than nonusers in the physical, psychological, and social relationship domains but not the environment domain of the WHOQOL-BREF after controlling for the influences of other factors. In addition, heroin users with obvious depression had poorer QOL in all four domains than those without obvious depression. Also, heroin users who perceived higher family support had better QOL in the social relationship and environment domains. Heroin users had poorer QOL than nonusers in multiple domains. Relief of depressive symptoms and enhancement of family support should be important strategies to improve QOL in heroin users.

摘要 本研究的目的在於比較海洛因使用者和非海洛因使用者生活品質的差異，並探討海洛因使用者在接受美沙酮維持治療前的生活品質和社會人口學資料、海洛因使用情形、家庭支持度和憂鬱程度之間的關連性。本研究以台灣簡明版世界衛生組織生活品質問卷，比較123位海洛因使用

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者和106位非海洛因使用者對照組個案之生活品質高低，同時調查海洛因使用者的生活品質之相關因子為何。海洛因使用者在生理、心理、社會關係等生活品質分項目皆比對照組個案較差，但在環境分項目上則無顯著差異。有多重因子與海洛因使用者的生活品質高低具相關性，包括合併顯著憂鬱者的生活品質在四個分項上皆較差，感受到較高家庭支持度者在社會關係及環境分項上有較佳之生活品質。由本研究結果可知：海洛因使用者的生活品質在許多分項上皆比非海洛因使用者差，改善憂鬱症狀及增加家庭支持度可以有效改善其生活品質。

Introduction

Quality of life (QOL) has attracted a great deal of interest in health science since 1980 [1—4]. Attention to QOL in patients with medical problems is an emphasis on a holistic view of health care [5]. QOL is defined as individuals' perceptions of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards, and concerns; it is a broad ranging concept, incorporating in a complex way the persons' physical health, psychological state, level of independence, social relations, personal beliefs, and relationship to salient features of the environment [6]. QOL has four uses in medicine: (1) for planning clinical care of individual patients; (2) as an outcome measure in clinical trials and health services research; (3) for assessment of the health needs of populations; and (4) for resource allocation [7].

There are several reasons to examine the level of QOL in heroin users. First, addiction to illicit drugs is a cluster of physiological, behavioral, and cognitive phenomena [8], which can damage individuals' physical and mental health, role performance, and social adaptation [9—13]. Basically, QOL measures involve two primary dimensions—physical and mental functioning. Examining the level of QOL provides knowledge of heroin users' subjective perspectives of their impairment in a multidimensional view of their lives. Second, heroin-using behavior is a chronic relapsing problem that is difficult to cure [14]. Assessments of the impact of heroin use on QOL are important for decisions about how aggressively the problematic behavior should be treated, assessing the health needs of patients, and allocating resources [7]. Third, QOL has been acknowledged as an important prognostic variable in the evaluation of the effects and outcome of treatment for heroin use, such as in methadone maintenance treatment (MMT) [15—20]. Previous research found that heroin users entering MMT had significantly worse physical and psychological health than the general population [18,21,22]. Their substantial physical and psychological impairment was greater than that of patients with chronic obstructive pulmonary disease [23], patients about to undergo heart surgery [24], and those with coronary artery disease [25]. In addition, heroin use also led to poor QOL in the social domain [18,21,22,26—28]. Varies factors, such as gender, polysubstance use, educational level, HIV status, dual diagnosis, and personality disorder, were associated with poor QOL among heroin users [15,28—30]. On the other hand, MMT has also been found to improve the QOL of heroin users [18,19,31]. However, very few studies have evaluated the correlates of QOL in heroin users at entry to MMT. Understanding these correlates may provide a basis to develop intervention strategies to improve the QOL of heroin users. Thus, the aims of this study were (1) to examine whether the different domains of QOL are affected by heroin use by comparing the QOL of subjects with and without heroin use and (2) to examine the association of QOL with sociodemographic characteristics, characteristics of heroin use, family support, and depression among heroin users entering MMT programs.

Methods

Participants

A group of 123 heroin users who visited an outpatient addiction treatment clinic in southern Taiwan for MMT were recruited into this study. The data in this study were collected before they started MMT. We also used subjects recruited from a previous study [32] who had never used heroin for the control group. We posted an advertisement in the hospital and in newspapers to invite heroin nonusers to participate in the study. A total of 157 persons responded to the advertisement. A psychiatrist assessed all responders systematically to determine whether they had any substance use disorders or psychotic disorders using the structured Mini-International Neuropsychiatric Interview [33]. Those who had any substance use disorders or psychotic disorders, drank alcohol more than once per month, or had low mentality were excluded. A total of 106 subjects conformed to the criteria and were recruited as the control group.

Survey instruments

World Health Organization Questionnaire on Quality of Life: Short Form—Taiwan version

The World Health Organization Questionnaire on Quality of Life: Short Form—Taiwan version (WHOQOL-BREF) was developed by the WHO to evaluate health-related QOL and make cross-cultural comparisons [6]. It has been adapted for use in Taiwan [34]. The WHOQOL-BREF Taiwan version contains 28 five-point items that assess general (two items) and four specific domains of QOL, including 7 items in physical health, 6 in psychological, 4 in social relationships, and 9 in environmental domains, with well-established validity and reliability [34]. The transformed scores of the four QOL domains range from 0 to 100. Higher scores on the WHOQOL-BREF Taiwan version indicate a higher perceived QOL.

The Center for Epidemiological Studies Depression Scale
The 20-item Center for Epidemiological Studies Depression Scale (CES-D) is a self-administered four-point scale assessing frequency of depressive symptoms in the preceding week, with scores ranging from 0 (never or rarely) to 3 (always) [35]. The Taiwanese version of the CES-D has been used for studying depression in Taiwan for many years [36] and possible total scores range from 0 to 60, with higher scores indicating more severe depression. A score of 17 or more is classified as obvious depression [35].

Family APGAR index
The Taiwanese version of the family APGAR [37] is based on the original version developed by Smilkstein [38]. The five-point response scales reflect frequency ranging from never to always. High scores indicate good family support.

Procedure and statistical analysis

The protocol was approved by the Institutional Review Board of Tainan Hospital Department of Health, Executive Yuan. Informed consent was obtained from all subjects before commencement of the study. Two research assistants evaluated the characteristics of heroin use and explained how to complete the self-administered questionnaires. If the participants had difficulty understanding the content of the questionnaires, researchers read the questions to them to maximize comprehension and reliability. Sociodemographic characteristics and family support on the APGAR Index were also collected from the subjects in the control group. Among the heroin users and nonusers, the influences of the characteristics of heroin users on the four QOL domains on the WHOQOL-BREF Taiwan version were examined using multiple linear regression analysis by controlling for sex, age, education, marriage, and family support. Among the heroin users, the associations of the four QOL domains with subjects' sex, age, education, marriage, family support, depression, and characteristics of heroin use were examined using multiple linear regression analysis. A two-tailed p-value less than 0.05 was considered statistically significant.

Results

Survey data on heroin users and nonusers and characteristics of heroin use in heroin users are shown in Table 1. The influences of heroin use on the four QOL domains were examined using multiple linear regression analysis by controlling for sociodemographic characteristics and family support and the results are shown in Table 2. Heroin users had poorer QOL than nonusers in the physical, psychological, and social relationship domains after controlling for the influences of other factors. However, no difference between users and nonusers was found in the environment domain.

In heroin users, the associations between QOL and several variables were examined using multiple linear regression analysis (Table 3). The results indicated that by controlling for the influence of other factors, heroin users with obvious depression had poorer QOL in all four domains of the WHOQOL-BREF than those without obvious depression. Meanwhile, heroin users who perceived high family support had better QOL in the social relationship and environment domains.

Discussion

In line with the results of a previous study [39], this study found that heroin users had poorer QOL than nonusers in

Table 1 Sociodemographic and survey data

	Heroin users (n = 123)			Heroin nonusers (n = 106)		
	Mean (SD)	Range	n (%)	Mean (SD)	Range	n (%)
Socio-demographic characteristics						
Age, yr	37.8 (8.0)	24–60		33.8 (8.1)	18–50	
Education, yr	9.6 (2.3)	3–19		12.0 (1.1)	9–16	
Gender, female			20 (16.3)			55 (51.9)
Married			29 (23.6)			38 (35.8)
Family support on the APGAR	12.2 (2.5)	5–20		14.3 (3.2)	5–20	
CES-D $\geq$ 17			88 (71.5)			
Characteristics of heroin use						
Use illicit drugs except for heroin			67 (54.5)			
Spend more than NT$ 30,000/mo on heroin use			57 (46.3)			
Duration from the first heroin use, yr	11.5 (7.4)	0.5–35				
Criminal records of heroin use			32 (26.0)			
Quality of life on WHOQOL-BREF Taiwan version						
Physical	53.0 (15.1)	13–88		70.5 (11.9)	38–94	
Psychological	46.9 (16.8)	0–88		54.1 (12.3)	25–81	
Social relationship	51.3 (15.8)	6–100		61.7 (13.4)	25–94	
Environment	49.5 (13.2)	19–88		51.6 (16.1)	19–75	

APGAR = family APGAR index; CES-D = The Center for Epidemiological Studies Depression Scale; NT$ = new Taiwan dollar; SD = standard deviation; WHOQOL-BREF Taiwan version = World Health Organization Questionnaire on Quality of Life: Short Form—Taiwan version.

Table 2 The effect of heroin use on quality of life by controlling the effects of family support, age, sex, education, and marriage in multiple linear regression analyses

	Physical parameter			Psychological parameter			Social relationship parameter			Environment parameter		
	Estimate	95% CI	*p*	Estimate	95% CI	*p*	Estimate	95% CI	*p*	Estimate	95% CI	*p*
Heroin use (1) *vs.* heroin nonuse (0)	−16.470	−20.858, −12.082	<0.001	−6.334	−10.996, −1.671	0.008	−8.219	−12.701, −3.738	<0.001	−0.079	−3.784, 3.626	0.966
Total APGAR scores	0.821	0.272, 1.371	0.004	1.327	0.743, 1.910	<0.001	1.369	0.808, 1.930	<0.001	1.319	0.855, 1.783	<0.001
Age, yr	0.031	−0.198, 0.260	0.788	0.010	−0.233, 0.254	0.934	−0.050	−0.284, 0.184	0.675	0.016	−0.178, 0.209	0.875
Females (1) *vs.* males (0)	−2.322	−6.553, 1.909	0.281	−0.842	−5.338, 3.654	0.712	5.737	1.416, 10.058	0.009	0.743	−2.829, 4.316	0.682
Education, yr	0.810	−0.180, 1.801	0.108	0.297	−0.755, 1.349	0.579	−0.300	−1.311, 0.712	0.560	0.662	−0.174, 1.498	0.120
Married (1) *vs.* unmarried (0)	−0.716	−4.797, 3.365	0.730	2.234	−2.102, 6.570	0.311	2.852	−1.316, 7.020	0.179	−0.521	−3.967, 2.925	0.766
Regular R^2	0.334			0.150			0.247			0.163		

APGAR = family APGAR index; CI = confidence interval.

Table 3 Variables associated with quality of life among the subjects with heroin use in multiple linear regression analyses

	Physical parameter			Psychological parameter			Social relationship parameter			Environment parameter		
	Estimate	95% CI	*p*	Estimate	95% CI	*p*	Estimate	95% CI	*p*	Estimate	95% CI	*p*
Females (1) *vs.* males (0)	−2.847	−10.243, 4.550	0.447	3.418	−4.712, 11.548	0.407	5.512	−2.287, 13.311	0.164	−2.039	−8.357, 4.280	0.524
Age, yr	−0.148	−0.606, 0.310	0.523	0.168	−0.335, 0.672	0.510	0.123	−0.360, 0.607	0.614	0.153	−0.239, 0.544	0.441
Education duration, yr	0.402	−0.764, 1.567	0.496	−0.160	−1.441, 1.121	0.805	−0.386	−1.615, 0.842	0.535	0.675	−0.320, 1.671	0.182
Married (1) *vs.* unmarried (0)	−2.676	−8.809, 3.457	0.389	0.763	−5.978, 7.504	0.823	1.525	−4.941, 7.992	0.641	−0.669	−5.908, 4.569	0.801
Illicit drugs except for heroin: use (1) *vs.* nonuse (0)	−2.555	−8.219, 3.109	0.373	−0.253	−6.479, 5.973	0.936	4.061	−1.911, 10.034	0.181	3.843	−0.996, 8.682	0.118
Spend more than NT$ 30,000/mo on heroin use	0.304	−5.102, 5.710	0.912	1.188	−4.754, 7.130	0.693	−1.008	−6.709, 4.692	0.727	−1.105	−5.724, 3.513	0.636
Duration from the first heroin use, yr	−0.122	−0.615, 0.371	0.624	−0.343	−0.885, 0.198	0.212	−0.123	−0.643, 0.396	0.640	−0.355	−0.776, 0.066	0.097
Criminal records of heroin use: yes (1) *vs.* no (0)	−2.836	−9.441, 3.769	0.397	−1.571	−8.831, 5.689	0.669	−0.184	−7.149, 6.780	0.958	0.463	−5.180, 6.105	0.871
Total APGAR scores	0.217	−0.556, 0.990	0.579	0.849	−0.001, 1.698	0.050	1.155	0.340, 1.971	0.006	1.135	0.475, 1.796	0.001
CES-D $\geq$ 17 (1) *vs.* CES-D < 17 (0)	−12.510	−18.315, −6.704	<0.001	−15.130	−21.511, −8.749	<0.001	−11.604	−17.725, −5.482	<0.001	−8.305	−13.264, −3.346	0.001
Regular R^2	0.215			0.230			0.202			0.247		

APGAR = family APGAR index; CES-D = The Center for Epidemiological Studies Depression Scale; CI: confidence interval.

the physical, psychological, and social relationship domains after controlling for the influences of other factors. Previous studies have found that heroin use can damage individuals' physical and mental health, role performance, and social adaptation [9—13]. Heroin use can harm psychological health directly or through the effects on interpersonal and role functioning [10,40,41]. The results of this study further demonstrate that heroin users can identify adverse physical and psychological conditions and social relationships they have encountered. Research has found that when enhancing subjects' motivation to change addictive behaviors, one of the major principles is to help them perceive the discrepancy between present behavior and important personal goals or values [42]. Thus, the results of this study indicated that clinicians should confer with heroin users about their perspectives on their satisfaction with the physical, psychological, and social relationship domains of QOL and motivate change of heroin-using behaviors.

Research has found that heroin users have high rates of unemployment, criminal records, and low educational levels [30]. They also have high risks for illness and death [30]. One might have predicted that heroin users have a poorer environment domain of QOL than heroin nonusers. However, this study found no difference in the environment domain between users and nonusers. One possible explanation is that the subjects in this study were entering MMT programs of their own free will and may have had better economic status and less criminal activity than heroin users with severe economic and legal problems. The results of this study indicated that QOL is not homogenous and single dimensional in heroin users; however, the reasons for the heterogeneous association between different domains of QOL and heroin use need further study.

The second important finding of this study is that heroin users with obvious depression had poorer QOL on all four domains of the WHOQOL-BREF than those without obvious depression. Previous research demonstrated that major depression is the most prevalent psychiatric comorbidity in heroin users, and 15.8—56% of heroin users have a diagnosis of major depression [43—46]. Psychiatric comorbidity can lower the QOL in the physical, psychological, and social domains in heroin addicts [22,24,47,48]. Meanwhile, individuals with psychiatric comorbidity often have more difficulty gaining access to treatment and in service utilization and have less successful outcomes than those without this comorbidity [49—52] Patients with dual diagnoses have poor psychosocial functioning and less adequate social support networks [49,53,54] than those without psychiatric comorbidity. They also receive less outpatient treatment and have poorer physical health [47]. This finding reminds clinicians that it is necessary to take comorbid depression into consideration when approaching heroin users. Treating depression should be an important step in helping heroin users change heroin-using behaviors.

Another important finding of this study is that heroin users who perceived higher family support had better QOL on social relationship and environment domains. Self-perceived high family support usually means that the subjects have good family function and relationships, which implies that heroin users would be offered financial support, a physically secure environment, health and social care, utilization of social resources, and a home environment by their families. That might be the explanation for the association between perceived family support and subjective QOL on social relationship and environment domains. Accordingly, family support is an important factor influencing the QOL of heroin users. Psychosocial intervention to increase family support and maintain good family relationships is needed when recruiting heroin users into MMT.

Several limitations of our study need to be considered. First, the results of QOL were based on subjects' self-reports, not objective measures. The severity may have been underestimated because of the sensitive nature of admitting to criminal records and deviant behavior. Second, a cross-sectional retrospective survey limits the ability to establish the causality of the results. Further longitudinal advanced study is needed to acquire more information for analysis. Third, the subjects in this study entered MMT for heroin abstinence voluntarily. Their characteristics of heroin use, psychiatric comorbidity, and QOL may be different from heroin users who did not receive MMT. Finally, further follow-up studies are needed to examine the effects of MMT on the changes of QOL in heroin users.

In conclusion, the results of this study indicate that heroin users have poorer QOL than nonusers in the physical, psychological, and social relationship domains but not in the environmental domain. Comorbid depression and perceived poor family support were associated with some domains of compromised QOL in heroin users. Based on the results of this study, clinicians should monitor the impact of heroin use on QOL and the treatment plan should be multidisciplinary, including medical, social, and psychiatric components. Relief of depressive symptoms and enhancement of family support are important strategies to improve the QOL in heroin users.

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